

AMENDMENTS TO THE CLAIMS

1. (Withdrawn) In a process for producing microchannels in a device having a substrate with etched microchannels bonded to a top plate, the improvement comprising:

annealing the bonded device to allow surface tension forces and diffusional effects to lower the overall energy of the microchannels by transforming the cross-section to a circular shape.

2. (Withdrawn) The process of Claim 1, additionally included bonding the substrate and top plate by a method selected from the group consisting of fusion bonding and anodic bonding.

3. (Withdrawn) The process of Claim 1, additionally including providing the substrate and/or the top plate from materials selected from the group consisting of glass, silicon and polymer.

4. (Withdrawn) The process of Claim 1, wherein the substrate and top plate are composed of glass, and wherein the bonding is carried out by fusion or anodic bonding.

5. (Withdrawn) The process of Claim 1, wherein the substrate is composed of glass and the top plate is composed of silicon, and wherein the bonding is carried out by anodic bonding.

6. (Withdrawn) The process of Claim 1, wherein the substrate and top plate are composed of glass, and wherein annealing is carried out at a temperature of 600⁰to 800⁰C for a time period of 2 to 24 hrs.

7. (Withdrawn) A method for producing microchannels having no sharp corners in glass, comprising:

isotropically etching at least one channel into a glass substrate,

bonding a glass plate to the substrate to produce at least one sealed microchannel therein, and

annealing the bonded glass plate and substrate causing transformation of the microchannel cross-section into at least a curved configuration without sharp corners.

8. (Withdrawn) The method of Claim 7, wherein annealing is carried out so as to produce a curved configuration of a substantially circular type.

9. (Withdrawn) The method of Claim 8, wherein the annealing is carried out at a temperature of 600⁰ to 800⁰C for a time period of 2 to 24 hrs.

10. (Withdrawn) The method of Claim 7, wherein the bonding is carried out by a process selected from the group consisting of fusion bonding and anodic bonding.

11. (Currently Amended) An apparatus having a sealed microchannel therein, produced by the method comprising:

providing an etched substrate,

providing an etched microchannel in said etched substrate,

providing an annealed substrate,

positioning said annealed substrate on said etched substrate so that said annealed substrate covers said etched microchannel in said etched substrate,

annealing said etched substrate and said annealed substrate to form an annealed microchannel in said annealed substrate over said etched microchannel in said etched substrate, and

bonding said etched substrate to said annealed substrate forming a bond connecting said etched substrate and said annealed substrate, wherein said etched microchannel and said annealed microchannel comprise said sealed microchannel.

12. (Previously Presented) The apparatus of Claim 11, wherein said annealing said etched substrate and said annealed substrate to form annealed microchannel is a high temperature annealing in the 600° to 800° range.

13. (Previously Presented) The apparatus of Claim 11, wherein said etched microchannel in said etched substrate and said annealed microchannel in said annealed substrate form a circular sealed microchannel.

14. (Previously Presented) The apparatus of Claim 11, wherein said etched substrate and said annealed substrate are selected from the group consisting of glass members, glass and silicon members, glass and polymer members, and members selected from the group of glass, silicon and polymers.

15. (Previously Presented) The apparatus of Claim 11, wherein said bond comprises fusion or anodic bonding.

16. (Previously Presented) The apparatus of Claim 11, wherein said annealed microchannel has depth of about 10 μm and a width of about 20 μm and said annealed microchannel is a high temperature annealed microchannel annealed in the 600° to 800° range.

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AMENDMENTS TO THE DRAWINGS

A letter to the Office Draftsman is enclosed submitting new drawings.